

FIG. 1

31~34... IGBT drive circuit

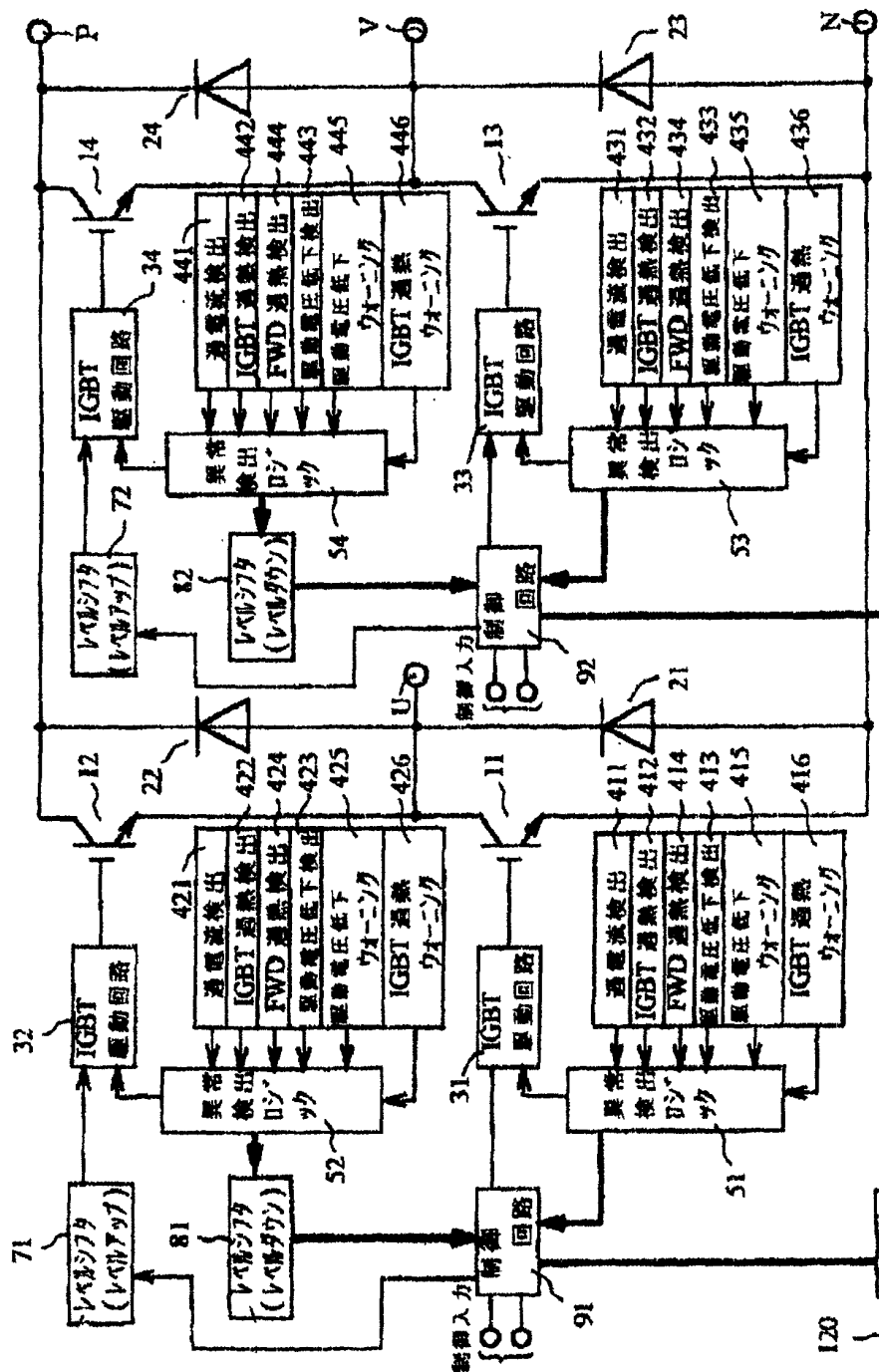
51~54... abnormal condition detecting logic

71, 72... level shifter (level up)

81, 82... level shifter (level down)

91, 92... control circuit

【図1】
Fig. 1



411, 421, 431, 441... overcurrent detecting
412, 422, 432, 442... IGBT overheat detecting
414, 424, 434, 444... FWD overheat detecting
413, 423, 433, 443... drive voltage drop detecting
415, 425, 435, 445... drive voltage drop warning
416, 426, 436, 446... IGBT overheat warning

110 Transmission circuit

31, 34 ... IGBT drive circuit

51, 54 ... abnormal condition detecting logic

71, 72 ... level shifter (level up)

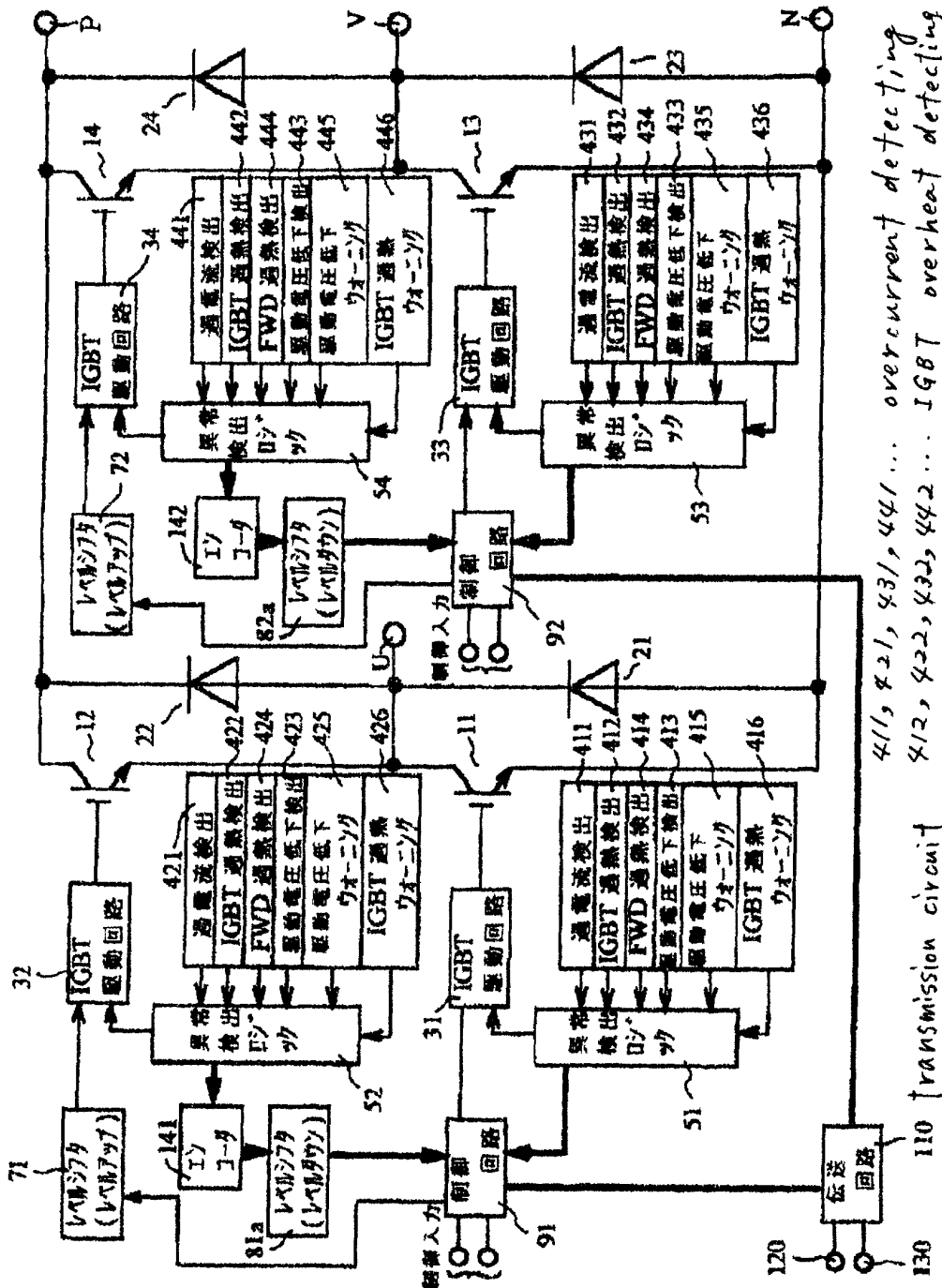
81a, 82a ... level shifter (level down)

91, 92 ... control circuit

141, 142 ... encoder

Fig. 3

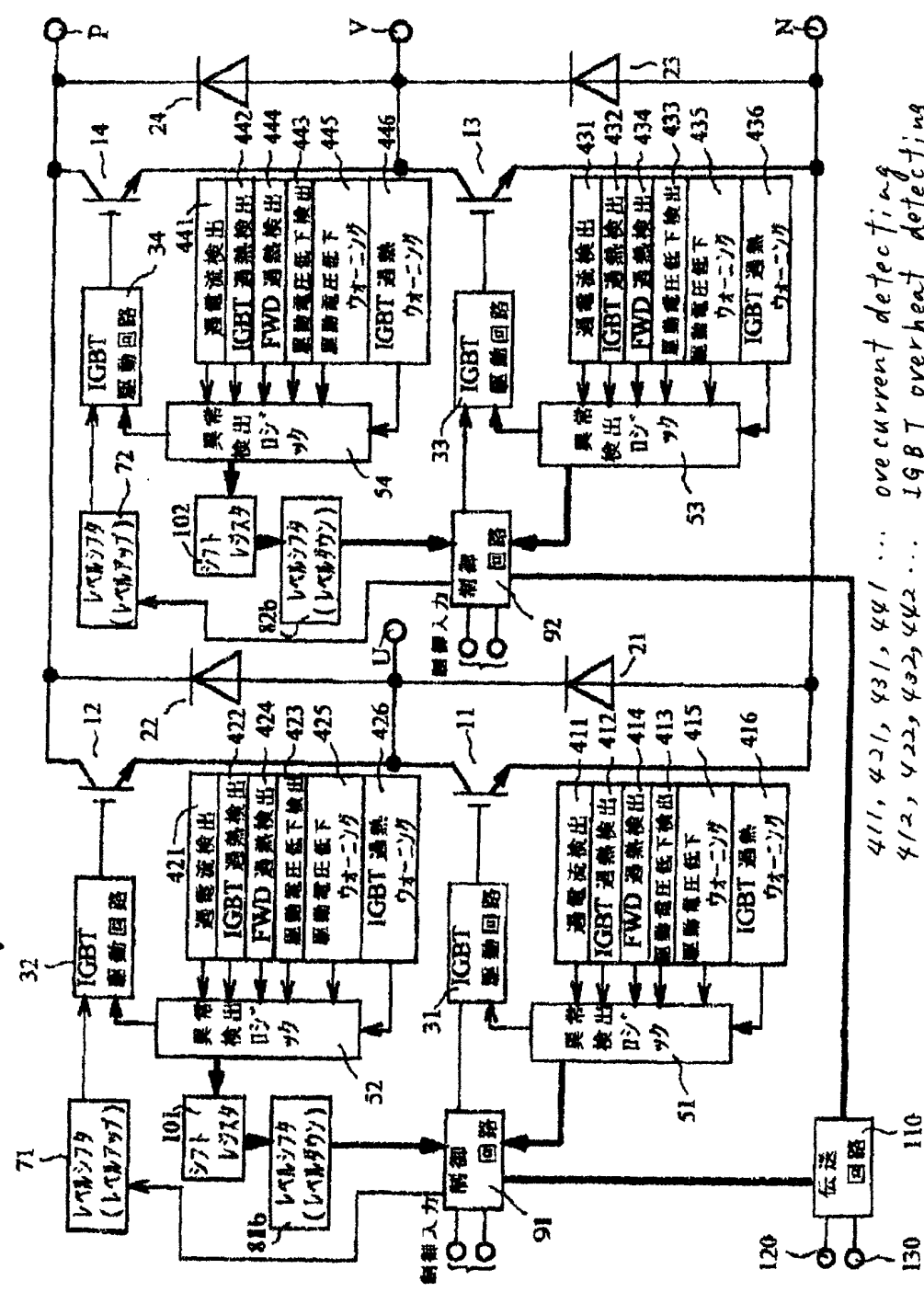
【図 3】



411, 421, 431, 441 ... overcurrent detecting
 412, 422, 432, 442 ... IGBT overheat detecting
 414, 424, 434, 444 ... FWD overheat detecting
 413, 423, 433, 443 ... drive voltage drop detecting
 415, 425, 435, 445 ... drive voltage drop warning
 416, 426, 436, 446 ... IGBT overheat warning

31~34... IGBT drive "overheat" detecting logic
 51~54... abnormal condition detecting logic
 71, 72... level shifter (level up)
 81b, 82b... level shifter (level down)
 91, 92... control circuit
 101, 102... shift register

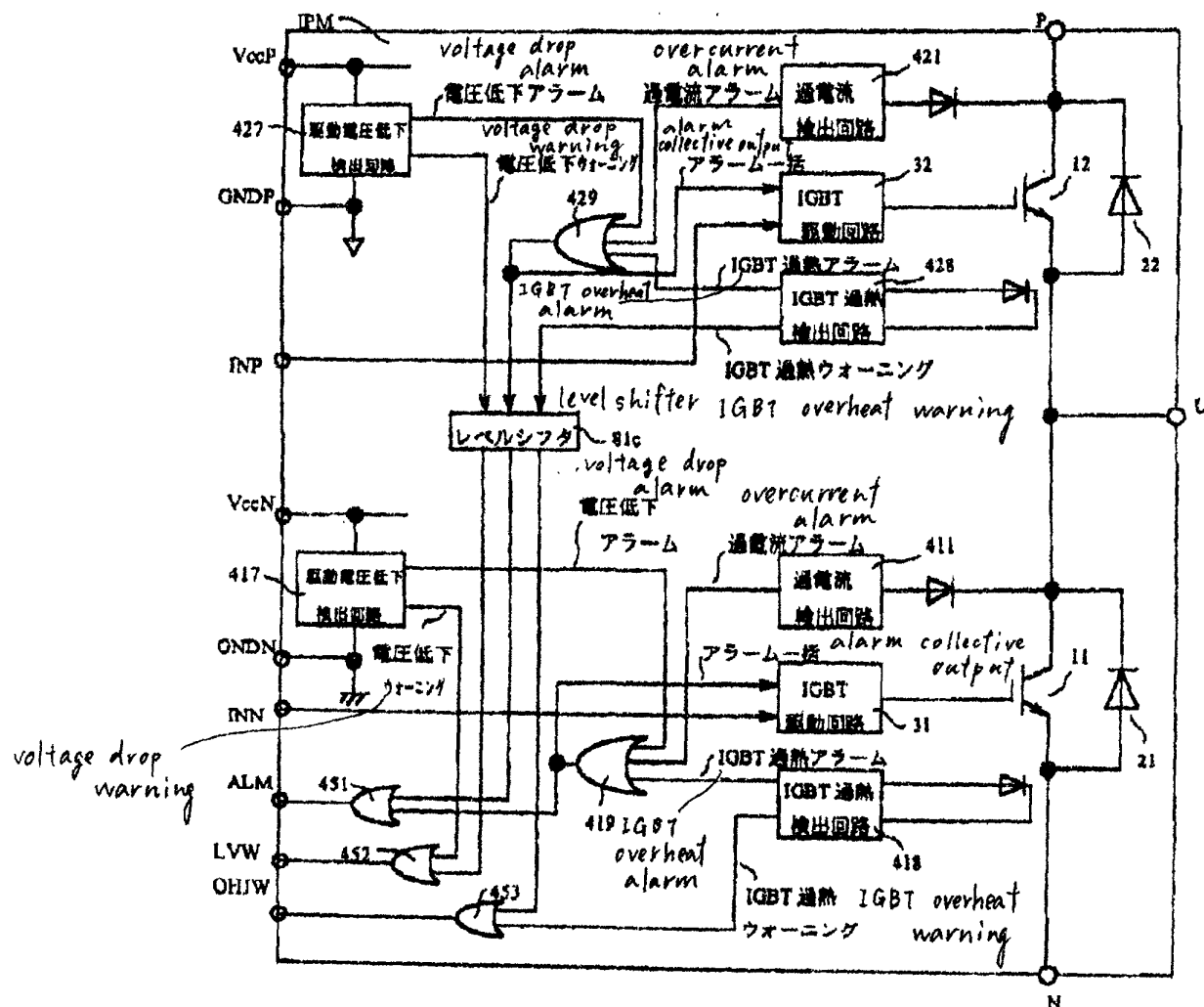
【図 4】
Fig. 4



411, 421, 431, 441... overcurrent detecting
 412, 422, 432, 442... IGBT overheat detecting
 414, 424, 434, 444... FWD overheat detecting
 413, 423, 433, 443... drive voltage drop detecting
 415, 425, 435, 445... drive voltage drop detecting
 416, 426, 436, 446... IGBT overheat warning

transmission circuit

【図5】 Fig. 5



31, 32... IGBT drive circuit

411, 421... overcurrent detecting circuit

418, 428... IGBT overheat detecting circuit

417, 427... drive voltage drop detecting circuit

31~34 ... IGBT drive circuit
 61~64 ... control circuit

51~54 ... abnormal condition detecting logic

411, 421, 431, 441 ... overcurrent detecting
 412, 422, 432, 442 ... IGBT overheating detecting
 413, 423, 433, 443 ... drive voltage drop detecting

Fig. 6
 【図 6】

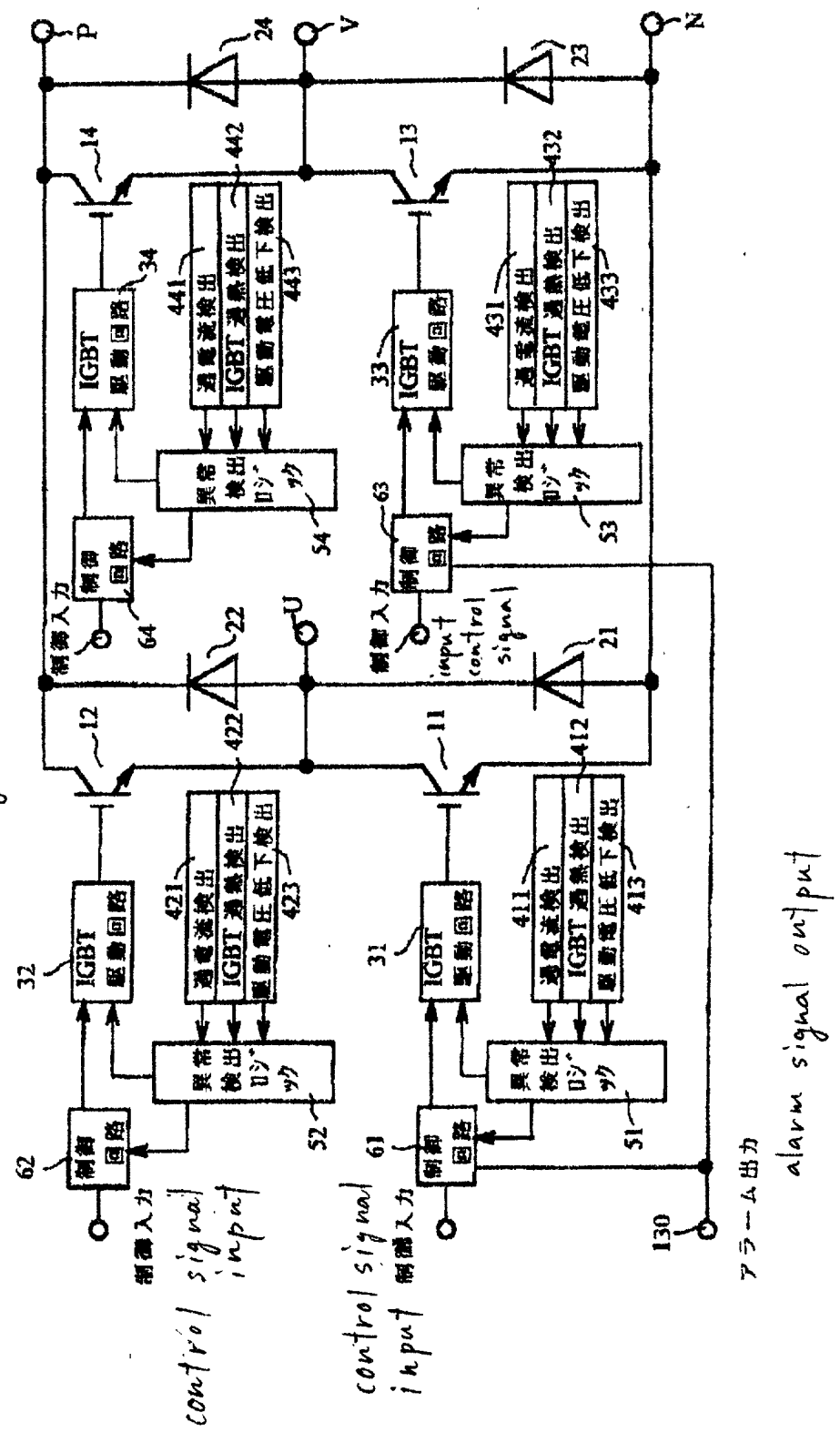


Fig. 7

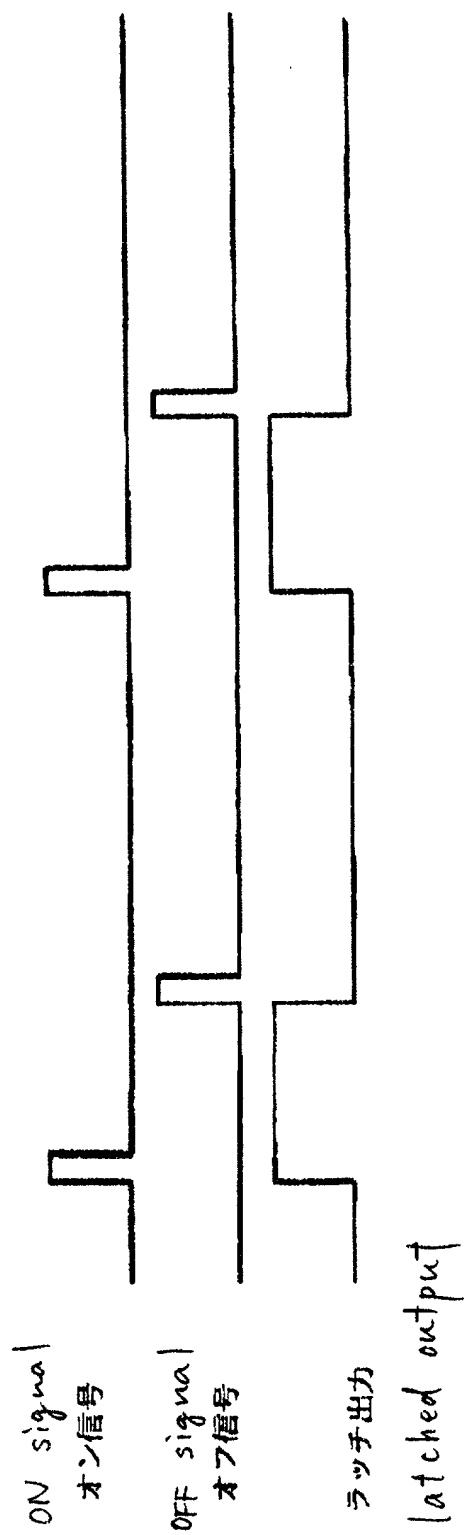


Fig. 8

